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ABSTRACT

An inservice workshop program for elementary school teachers in Israel helps them in coping with students of diverse ethnic and economic backgrounds. Program topics include discussion of: individual differences, pluralistic views of education, tests and measurement methodology, and new instructional strategies. Emphasis is placed on values clarification so that participants can develop more objective perceptions, reduce hostile feelings, and encourage an acceptance of heterogeneity. The program also focuses on planning for core and peripheral curriculum, teaching and learning for mastery, teaching and learning by way of a variety of alternative methods, and measurement and evaluation of achievements. The most salient components of the program, as perceived by the teachers, are: (1) the concept of heterogeneity; (2) teaching slow learners; (3) matching time and pacing to individuals; and (4) core and peripheral curriculum. (JD)

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A STRATEGY OF PROFESSIONAL DEVELOPMENT FOR DEALING WITH INDIVIDUAL DIFFERENCES IN THE CLASSROOM: AN ISRAELI CASE

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Perspectives

The educational needs of a multiethnic society and the problems of teaching in heterogeneous classes is one of the main educational issues in Israel (Adar, 1981). Heterogeneity is defined in terms of socio-economic and ethnic background, as well as in terms of academic success of pupils. Manifold studies in Israel deal with this problem area, (Minkovich et al., 1977; Frankenstein, 1970, 1979; Feuerstein, et al., 1972; Klein and Eshel, 1980 and Stahl, 1979.) The main thrust of the educational endeavour in Israel is to achieve simultaneously two goals: 1. to integrate students with different ethnic identity, providing them with an opportunity to share elements contributed by all, interacting in the same educational environment, 2. to foster the intellectual development and the potential abilities of each student. These goals may be conceived of as being contradictory and pose, therefore, a seeminly insurmoutable problem for educators. Adar (1981) claims that on social and national grounds, school integration is desirable and necessary. She proposes that there is a better chance of success when heterogeneity is consistently preserved in classes in all subject matter areas without streaming the pupils. Yet, individual differences are a fact, the students in each classroom vary on a wide range of traits. "Thus, the aim of achieving optimal development for each child means that what counts as "achievement" should be multidimensionl and include various types of both scholastic and non-scholastic areas of accomplishment." (Adar, 1981, p.9). A possible educational solution to the problem of combining classroom integration of students with the fostering of individual growth is the use of varied teaching approaches, as well as a complex aptitude treatment interaction (Smith, 1981). Because of inherent difficulties, teaching in heterogenous classes clearly calls for special training.

How can this training be accomplished? Staff development seems more appropriate than pre-service training. Elliott (1979) found that some experience with practice is necessary in order to make sense of new theoretical principles and new approaches.

The present study documents the events of a professional development program for teachers of heterogenous classes in order to gain insights into its complexities.

What makes such a programm succeed? Fullan (1982) suggests that professional development succeeds when it focuses on a felt need, that teachers must have the opportunity to interact with each other and that the educational establishment must be perceived as supporting and valuing professional development activities.

Adopting the framework of Connelly (1972) and McLaughlin and Marsh (1978) teachers were considered as full partners in the development and implementation of innovation. An attempt was made to relate the professional development to concrete classroom concerns of teachers. They participated in the efforts to identify instructional models for teaching heterogenous classes, as well as in the planning and implementation of the professional development program.

The study was designed to investigate a strategy for professiosnal development pertaining to modes of coping with individual differences in heterogeneous classes. More specifically the objectives were:

1. to identify instructional strategies which are appropriate for teaching heterogeneous classes, in cooperation with teachers, and relating to actual practical concerns and problems;
2. to plan, implement and evaluate a professional development program in collaboration with teachers and based on these identified instructional strategies;

3. to inquire into the nature of professional development, its components, processes and outcomes.

We turn now to a description of the various components of the program.

(a) Entry negotiations

A project proposal was submitted to the Chief Scientist at the Ministry of Education. The project described the need to investigate ways and means of teaching in heterogenous classrooms, the proposed inservice program, and outlined some of the expected outcomes in teacher activities and in pupil achievement.

Having received the approval of the Chief Scientist, the next step was to ensure the cooperation of the people in the field, namely: superintendent, supervisors, principals, teachers. Good communication with educational authorities was found in previous experiences to be a condition sine qua non for productive cooperation, especially in view of somewhat suspicious attitudes on the part of practioners toward researchers: "Researchers are interested in publishing," "The moment the research is finished, researchers do not care about the linkage between their results and field work", are only a few common remarks. This atmosphere had to be replaced by one of trust and motivation to cooperate. To achieve this aim several meetings were held with the superintendent and school supervisors, who allowed for long discussions within the framework of their regular meetings.

The investigators' policy was not to present a ready-made plan, but rather to discuss and define the problems with practitioners seeking with them for ways and means of coping with the identified problems.

Having decided upon the necessity of conducting an inservice program, the supervisors raised the question of who would be the teachers to participate.

At this point of the discussion a brief description of the Northern Area of Israel is in order.

There are four relatively large cities in the Northern district of Israel (Nazareth, Tiberias, Safed and Kiriat Shmonah). Most of the population is spread, however, in small towns, farms and Kibbutzim. The average travel time to the closest city is about one and a half hours, which means, that several teachers would have to spend about three hours a day on travelling to come to the workshop. Teachers had thus to be highly motivated to enroll in the program. The call for participation was passed around by the supervisors who knew the schools well, and only to those schools which were relatively close to Tiberias. Schools had to be close since, as will be described later, the program included observation of teachers at work. The final list of teachers who enrolled in the program included eighteen participants, teaching in grades 2nd-5th at the elementary school level.

The program lasted for two years in which teachers met once in three weeks for a whole school-day. This was made possible by the aid of the principals who provided for substituting teachers to teach classes while their teachers participated in the program work-shops. Individual meetings with participating teachers were held about once a month, usually in the respective schools.

(b) The In-Service-Program - Contents and Processes

The meetings with the teachers covered a wide range of activities. The rationale underlying these activities bore an eclectic nature. It integrated theory and experiential processes, covering cognitive, socio-emotional and behavioral aspects to suit teachers' individual needs, on the one hand, and the aims of the program, on the other hand. Within the theoretical realm, teachers were exposed to knowledge of relevant topics, such as individual differences, pluralistic views of education, tests and measurement methodology, and new instructional strategies. This was done by way of lectures, discussions, small group assignments, concerning the applicativity of the newly acquired knowledge, and guided reading.

The experiential aspect touched on affective-emotional processes and included values clarification techniques, role-playing, simulations and discussions.

The translations of the acquired knowledge into practice was carried out through a series of activities, ranging from role-playing and micro-teaching, including self-confrontation techniques, to actual classroom teaching. All these activities were followed by feedback, discussions and quite often by re- teaching. The order of dealing with each aspect varied according to the topic studied. As was mentioned, this eclectic approach was adopted to suite different needs of teachers. It was also based on Kurt Lewin's view (1958), who stated that for a significant change to occur, one must go through processes of cognition, internalization and behavior.

The following example is presented to illustrate the point:

The need to clarify the concept of "heterogeneous classrooms" arose during the discussion in the first meeting. In order to satisfy this need, values clarification techniques were employed, wherein which each participant was asked to freely associate and list all descriptions that came to mind. These were analyzed in small groups with regard to perceptions and attitudes that underlied the free associations. This analysis yielded a rather interesting insight: teachers referred to the lower level pupils in classrooms rather than to the higher level ones. They attached to pupils of a low SES origin characteristics of low motivation, of laziness, of low thinking level. The teachers remarked that it is this group of pupils in heterogenous classrooms that creates the most difficult problems to cope with and that causes a low average of achievements. Having pinpointed teachers' perceptions and attitudes toward the "lower" groups in their classrooms, more clarificaton techniques were used in which attempts were made to make these perceptions more objective, to reduce hostile feelings, to accept heterogeneity and find in it a professional challenge.

The theoretical aspect of learning included lectures and discussions regarding heterogeneity, individual differences concerning motivation and iterests, intellectual abilities and skills. The translation into practice was done by studying tests and questionnaires intended to diagnose individual differences in learning style and pace, in extent of independence, in various skills, in reading comprehension, and in interests. Finally, teachers were asked to actually employ these tests in various classrooms of their schools and create "classroom profiles", "small groups profiles", and "individual profiles", as a basis for planning instruction.

This is but one example of the ways by which various topics were treated, covering, as was mentioned, a wide range of activities and aspects.

The clarification of the concept of 'heterogeneity' was the first topic that was dealt with. It was followed by analysis of the classroom profiles that were generated, which in turn raised the need to employ differential ways of teaching.

As a result of discussions into which teachers brought their own experiences, attitudes and knowledge, it was decided to focus on the following topics: planning for core and peripheral curriculum; teaching and learning for mastery; teaching and learning by way of a variety of alternative methods; measurement and evaluation of achievements. These topics were then introduced into the program, some by way of lectures, some by demonstrations in classrooms, and some by laboratory exercises, in which teachers experienced the suggested methods as students, analyzing the processes they went through and drawing their own conclusions. The study of each topic ended by classroom visitations in which participating teachers actually performed the methods suggested and studied in the workshops. These experiences started by pre-lesson sessions in which anticipated goals, problems and ways of coping with them were raised and analyzed. They ended in discussions in which feedback was provided and the next steps of study were decided upon.

A small group of university students, studying for their master's degree and participating in a seminar devoted to problems of teaching in heterogenous classrooms, observed the lessons and wrote down precise protocols, which were then used for analysis and evaluation.

Outcomes

The project generated several outcomes: the development of a teaching strategy, its implementation as well as teacher and pupil growth, to be described in the following paragraphs.

(a) The teaching strategy developed for teaching in heterogenous clasrooms covered a wide range of activities presented in the following Flow Chart.

The Chart describes the strategy of teaching-learning activities in heterogenous clasrooms which proceeded as follows:

First, an "achievement profile" of the classroom as a whole and of each individual was drawn from several sources: various assignments, tests, interviews, discussions.

The profiles served as a basis for planning and decision-making regarding the core curriculum - topics and skills to be mastered by all - and the peripheral curriculum that called for alternate levels of achievements, for enrichement and creativity. The core curriculum was taught by "mastery learning" (Bloom, 1968) to the whole class as a group with differentiated feedback, repetition and drills to suit individual paces of learning. The peripheral curriculum was taught in a wide variety of ways, ranging from guided to independent study, in small groups as well as on individual basis, in small classroom learning centers, where pupils found a lot of divergent materials to work with and in which they developed their own materials, raised their own questions and suggested assignments, which they then carried out.

(b) Pupil Achievements were evaluated in several ways;

(1) Achievement tests were administered. The test consisted of items considered as core and of items considered as peripheral. It was administered before and after teaching the unit to four randomly selected classrooms. The results are presented in Table No. 1.

TABLE 1: Acquisition of Knowledge: Pre-Post Achievements in Percentage of Correct Items

	Pre-Test	Post-Test
Core	37.5	75
Peripheral	15	55

Findings indicate a larger proportion of growth within the core as comapred to the peripheral curriculum. This is not entirely surprising considering the rationale of the strategy under study, which strives for mastery. Indeed, the mastery of 75% of the core curriculum is quite satisfying, especially in view of the previous low level of knowledge (37.5%)

A considerable amount of growth occurred within the peripheral curriculum as well. While this growth may be accounted for by the alternate methods based on individual instruction and learning, the growth within the core curiculum may be due to drills, repetitions and the systems analysis employed.

(2) At the end of the project pupils of four randomly selected classrooms filled questionnaires which were developed to assess their perceptions of the work done in their classrooms. The questionnaire consisted of eight items, to which pupils were asked to relate on a 1-5 interval scale, where "1" means "not at all" and "5" - "very much". Scores were averaged across pupils. Findings are presented in Table No. 2.

TABLE 2: Pre and Post Perceptions of Classroom Work

Item	Pre X	Post X
1. I feel I make progress in my studies	4.4	4.4
2. I like to study in our class	3.7	4.3
3. I try hard, but I don't succeed in my studies	4.5	3.7
4. Our teachers do not teach new topics until all of us know the old one	3.0	4.5
5. Our teacher proposes different topics to different pupils	3.1	4.1
6. The teacher helps us whenever we need help	2.9	3.8
7. I can work on topics of my own choice	3.1	4.3
8. Every pupil in the class gets a fair chance to study	3.5	3.9

The general picture presented in the table indicates that average scores are higher in the post assessment in all those items related to the teaching strategy under study (4,5,6,7,8), they are slightly higher in two items that pertain to motivation (1,2). One average score is lower on the item concerning effort with no success (3). Findings point to differences between pre and post assessement in the expected direction, namely, greater sensitivity of teachers to divergent needs of pupils.

(3) Impact on Teachers

(a) Before describing some of the outcomes of teachers participation in the program it seems appropriate to document some of their expectations.

What did they expect?

Some of their expectations are presented in their own words:

"I was looking for ways of handling a heterogenous class, mainly instructional strategies."

"Children don't learn as they should, I hoped to learn how to help them."

Some of the participants were concerned mainly with their pupils' needs, whereas others were thinking about their own professional repertoire. The teachers were aware of diferences in ability, motivation and achievement in their classes. "There are only 28 children in my class. Ten of the better pupils have left the school. Some of the children come from upper level homes and some from low level ones. It is an average class. I like to work with the children." It is interesting to note, however, that this teacher did not remember the names of all her pupils or their order of sitting in the class.

In another class the teacher was allotting much time and attention to one of the slower pupils. She too was aware of the differences in scholastic aptitude among her 20 pupils. "There are some pupils who are very gifted and are active in the class, others work quickly, some of the less able try hard but others don't want to learn and create disciplinary problems." As noted before this teacher was devoting much time to one of the slowest pupils, not being aware of the dissatisfaction of others.

(b) What happened to the teachers, did they sense that they gained new insights and acquired important strategies and skills? How were these expressed in their teaching?

The following tables present changes in the teaching behavior of six teachers observed in three randomly selected lessons before and after participation in the program.

TABLE 3: Instructional strategies used by teachers (in percentages of classroom time)

Lesson	Before Program	After Program
Instructional Strategy		
Classroom Discussion	62%	53%
Playing Games	19%	-
Copying from the Blackboard	7%	3%
Individual Assignments	-	15%
Reading Comprehension Exercises	4%	15%
Reinforcement	-	9%
Classroom Management	8%	5%

Before the program teachers did use divergent instructional strategies but there were no individual assignments, no individualized reinforcement, little reading comprehension exercises and more general discussions. Classrom management presented no problems after the program. It seems that the teachers motivated their pupils more and did not devote as much time to discipline the class. While core components of the curriculum were dealt with in a frontal situation, the peripheral components were taught individually or in groups. Teachers became more sensitive to the time element in their teaching and divided their time carefully between core and peripheral components of their lessons, averaging 60% to core activities.

Some results can be shown in the area of levels of questions and are presented in Table No. 4.

TABLE 4: Levels of questions of teachers (in percentages of classroom time)

Levels of questions	Before Program	After Program
Knowledge, Information	100%	53%
Comprehension	-	47%
High Level (application, analysis, synthesis, evaluation)	-	-

Though did not use high level questions at all, after participating in the program the teachers asked more divergent kinds of questions.

c) How did the teachers perceive of the program and its impact on their ability to teach in heterogenous classes?

All participants were asked to sum up in writing their experiences in the program and its impact on their work. Sixty-three statements were collected and categorized according to the basic concepts dealt with during the program. Results are presented in Table No. 5.

Flow Chart of Teaching-Learning Activities

1. Diagnosis of Classroom and Individual levels of Achievement and Individual Differences

2. Planning Differentiated Curriculum to Suit Individual Differences and Deciding upon Level of Mastery for all

3a. Mastery Learning of Care Curriculum

3b. Alternate ways of Teaching and Learning of Peripheral Curriculum

4a. Formative Measurement of Achievement, if: not satisfactory/satisfactory

4b. Reteaching

4c. Evaluation of Learning Outcomes

5. Planning the Study of Next Topics, Skills

TABLE 5: Teachers' Perceptions of the Program's Impact
(in percentages of statements)

Basic Concepts	Percentage of Statements	Sample of Statements
Mastery Learning	8%	"I apply mastery learning in my class" "I teach so that the slow learners will reach mastery"
Core and Peripheral Curriculum	12%	"I try to divide my lesson planning into core and peripheral components" "Sometimes a whole lesson is devoted to 'core' curriculum.
Heterogeneity (in ability, background etc.)	33%	"Clarification of the concept has helped me greatly" "I prepare tasks for different levels of pupils"
Matching Time and Pacing to Individuals	13%	"I stay over after school hours to help the pupils" "It is important to know how to reach every pupil"
Diagnosis of Pupils' Needs	3%	"Before every new topic I assess the knowledge of my pupils" "We should have been assessed more in the program"
Motivation	6%	"If I encourage the slow pupils they try harder" "Even those who seldom participated spoke up"
Teaching Slow Learners	25%	"I became aware of the need to relate to slow pupils" "I learned new ways of teaching slow learners"

To sum up, the most salient components of the program, as perceived by teachers, seemed to be the following: the concept of heterogeneity; teaching slow learners; matching time and pacing to individuals; core and peripheral curriculum. All these were indeed central components of the program.

Conclusions

A general comment seems appropriate before moving to conclusions. Since the main aim of the project was to learn and gain insights into the processes of building a teaching strategy and put it into practice by the aid of an in- service programm, no a-priori research hypotheses were proposed, and the focus of attention was directed towards qualitative rather than towards quantitative features.

As was mentioned, the project described here presents an attempt at investigating suitable ways of teaching in heterogenous classrooms. The project was characterized as follows: building a variety of teaching ways into a teaching strategy through an in-service program; full cooperation and involvement of teachers in the processes of deliberations and decision-making; two-way negotiations: from theory into practice in laboratory and actual classroom settings, followed by constant feedback, and from practice back to consideration of theoretical approaches.

The feedback received from teachers and supervisors in discussions and interviews at the end of the project was favorable and encouraging. In an attempt to analyze what made the project succeed, several aspects have to be considered. (a) Situational factors - the fact that the superintendent, supervisors and principals were constantly informed about the proceedings, demonstrated favorable attitudes and visited the workshop and the schools not only diminished obstacles but also served as a reinforcing power, especially to those teachers who were authority oriented. A factor that had not been fully considered during the planning

stage was the dilemma of what would work better - concentration in one or two schools only, or diffusion of efforts in several schools? Each possibility bears, of course, its own advantages and disadvantages. It is however the feeling of the project initiators that in the present case, in which no ready-made structured method was brought from the outside, but was rather developed during the process, the concentration in one school might have had greater impact. Faculty meetings could have been devoted to project topics, mutual feedback and reinforcement might have been provided more intensively and the whole school morale as an innovating school might have surged. Logistically it might have been simpler to arrange the dates and times of meetings in one school than coordinate several schools together.

(b) Teachers - Interestingly enough, teachers expected that they would be presented and exposed to new knowledge and a new teaching repertoire in a rather passive way of learning, of receiving. During the workshops, however, this atitude changed, teachers became very active, initiative, proposing ways of teaching and volunteering to try them out. It apears, that it was this intensive involvement that generated motivation to grow professionally and to improve pupils' achievements.

Teachers' motivation generated ideas and attitudes of experimentation, which in turn helped some of the teachers to create a more positive professional self-image and a sense of autonomy and freedom to try out own ideas.

From the researchers' point of view, the active participation in the workshop bore a potential of changing teachers' outlooks from perceiving the classrom as a rather static environment to a dynamic one, in which processes <u>can</u> be changed and pupils' achievements improved and enriched. The program may be viewed as providing teachers with tools for professional self-development. Hopefully, the active involvement in analysis of classroom situations, in proposing ways to suit the

classroom profiles, to try out a variety of ways and to constantly evaluate, will be transferred to new topics. Even if this transfer wil not occur with all teachers in all situations, the experience itself is valuable as it shows that changes are possible and efforts are worthwhile.

c) Teaching - the eclectic strategy developed in the course of the program is one modest outcome, which needs further investigation and adaptation. As mentioned, quantitative analysis was not the aim of the project. It was carried out only to the extent needed to show the teachers that the strategy worked. Further experimentation with the proposed teaching strategy, followed by intensive quantitative analysis and qualitative evaluation is needed.

What has been described is a dual purpose attempt - to find ways of coping with individual differences in heterogenous classrooms and to help teachers grow professionally in a collaborative experiential atmosphere of an in-service education program.

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